Nutrition News

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NUTRITION PLANNING FOR NATIONAL DEFENSE

By Russell M. Wilder, M. D.
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The national defense program entails the fullest possible mobilization of the nation's energies, and to this the newer knowledge of nutrition should contribute importantly. During the Belgian famine of World War I, nutrition authorities recognized that the sickening and death rate of a population do not depend exclusively on the amount of food available. They urged Americans to use more leafy vegetables and milk. Since that time much more information has become available.

Food Needs

Calories in the form of flour and sugar are abundant in the United States. The average man requires about 3,000 calories a day. Protein must be had, and about a third must be of high biologic value, namely, such protein as is found in meat, eggs, milk, cheese, and a few of the vegetables.

Fat is a necessity aside from its energy value. Provision of fat is no problem in America.

Calcium in many diets is less abundant than is desirable. An intake of less than 0.8 gm. for a man of average stature is considered to be unsatisfactory, and such an intake is difficult to attain unless one pint of milk or the equivalent in cheese is included in the day's food. Insufficiency of calcium not only leads to demineralization of the skeleton; it also may provoke instability of the nervous system.

The newest of the new knowledge centers about the vitamins. Vitamin deficiencies constitute the principal "hidden hungers," subclinical abnormalities which until lately, for the most part, were unrecognized.

Nutrition Plans

The importance of the nutrition front received early recognition as the existing emergency developed. National nutrition activities, directed toward defense, are centered in the office of the Federal Security Administrator, ex-governor McNutt. Dr. Helen Mitchell with the title of Director of Nutrition functions in this division. Her office serves particularly to stimulate and co-ordinate state and local nutrition programs. Serving as a co-ordinating factor among established government nutritional activities is Mr. M. L. Wilson, advisor on Nutrition to the National Defense Advisory Commission.

The plans are as follows:

1 . . Reinforcement of present activities of such agencies of the Government as have had nutritional programs is anticipated.

2 . . Measures are projected for increasing the food-purchasing power of low income groups in which extension of the stamp plan of the Federal Surplus Commodities Corporation is to be sought. Also for this purpose the school lunch program looms large and must be extended. The value of well-planned lunches has received recognition.

3 . . Efforts must be directed to improving nutrient quality of cheap staple foods. Bread and flour have already been "enriched."

4 . . Through newspapers, magazines, radio broadcasts, movies, lectures, exhibits, and posters, measures will be promulgated for wide dissemination of information on selection of food.

5 . . The assistance of professional groups will be solicited. The support of physicians is indispensable; so also is that of dentists, nutritionists, nurses, dietitians, social workers, and teachers, who can influence nutritional practices.

Doctor Wilder

The supply of man power in the United States is not inexhaustible, and modern weapons and war industry demand not only men but efficiency. The demonstration by many careful clinical observers that fear is an early symptom of nutritional deficiency is cause for actual alarm. A nation, today, must guard against impoverished diets; it must look to its mental and moral fiber as well as to its other natural resources.

It is important now to secure the co-operation of all the groups, both public and private, which are able to contribute to improving the nutritional status of the nation. We must act quickly. Stamina and determination are pressing needs in the present emergency, and the evidence is clear that will-to-do, self-confidence and courage are directly affected by what men eat.

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Glances AT NUTRITION RESEARCH

The recent National Nutrition Conference for Defense served to re-emphasize the necessity for applying the findings of nutrition research studies to everyday diets.

Calcium and Fluorine — Experiments show that calcium protects the teeth from fluorine, which causes mottled enamel. One group of experimental animals was fed a high-calcium diet plus fluorine and the other group was given a low-calcium diet plus fluorine. Although the animals on the high-calcium diet had heavier bones, the percentage of fluorine in the teeth, bones, and soft tissues was considerably less than in the rats on a low-calcium diet.

—J. Nutrition 22:91 (July 10) 1941.

Tooth Development — Human teeth serve as an index of the prenatal diet of the mother and of the food of the child during infancy and childhood. The teeth show rings of calcification similar to annual rings in trees. Over 1,000 teeth have been studied and results show that periods of susceptibility to defects in calcification and formation occur at the ages of 10 months, about 2½ years, and about 5 years.

—Amer. J. Dis. Child. 62:33 (July) 1941.

Calcium Requirement — Calcium balance studies were made on seven healthy adults, in order to determine their calcium requirement. During the basal periods they were given a diet low in calcium. Pasteurized fluid milk was added during the experimental periods, in amounts calculated to bring each subject almost into calcium equilibrium.

The daily calcium requirement of one subject was 981 mg.; the other six subjects ranged from 506 to 686 mg. The average for all seven subjects was 662 mg.

The requirement for calcium as determined in this study represents the minimum amount needed for calcium equilibrium; lesser quantities would have resulted in a drain of calcium from body tissues.

This study serves to re-emphasize the importance of milk for the nutrition of the adult since none of these subjects could have eaten enough non-milk foods to provide for calcium equilibrium.

—J. Nutrition 21:565 (June) 1941.

Rural Nutrition — A nutrition survey is in progress in a rural area in Tennessee, with a population of about 2500. Food consumption records are kept, and complete physical examinations made. The findings so far indicate calorie deficiency and underweight in many age groups; anemia in women and children; and protein deficiency in adults. Visual tests show vitamin A deficiency in over 50% of the subjects. Vitamin C deficiency exists in about 20%, mostly infants and adults. Vitamin B_1 deficiency is not common but riboflavin is lacking quite frequently. The need for correcting mild deficiencies is indicated.

—Am. J. Pub. Health 31:704 (July) 1941.

TIMELY TOPICS

DR. WILDER

Dr. Russell Wilder, author of the leading article in this issue, is Professor of Medicine at the Mayo Clinic in Rochester, Minnesota, as well as Chairman of the Committee on Food and Nutrition of the National Research Council. The latter committee was set up to advise on problems of national nutrition in the defense program. A major activity of this committee has been the development of the new dietary allowances.

NEW ALLOWANCES

The new allowances for the various dietary essentials are intended to serve as a guide for planning adequate meals for people of the United States. The recommended amounts of the various nutrients can be obtained through a good diet of natural foods. For a resume of daily standards for adults and foods which meet them, see page four of this issue.

BORDEN AWARD

Research showing that the human system utilizes the calcium in milk more fully than the calcium found in any other food tested, won the 1941 Borden Award for Dr. Julia Outhouse, Professor of Nutrition at the University of Illinois. The award was made at the American Home Economics Association convention in Chicago, June 23. Dr. Outhouse's studies have served to re-emphasize the importance of milk in human nutrition.

PROBLEMS IN CALCIUM METABOLISM IN THE ADULT MAN

By F. R. Steggerda, Department of Physiology
University of Illinois

During the past four years, with the help of Professor H. H. Mitchell of the Animal Nutrition Division of the University of Illinois, 28 different calcium metabolism tests were made on nine adult males. The object of the tests was to determine the actual amount of calcium the human body can utilize from milk, as well as to establish a possible standard based on weight or surface area for the actual amount of calcium the adult man should consume in a day.

Low Calcium Diet

The procedure consists simply in first going on a fixed diet low in calcium for 20 days during which time a state of constant negative calcium balance is reached. This is obtained by comparing, at four day intervals, the total calcium intake with the loss by way of the urine and feces. The daily diet consumed by most of the individuals to produce this negative calcium state was as follows:

Breakfast: 100 cc. orange juice, 224 gm. oatmeal.

Lunch: 50 gm. whole-wheat bread, 48 gm. bacon, 60 gm. oatmeal cookies, 180 gm. apples.

Dinner: 160 gm. baked potatoes (with skins), 80 gm. beef, 100 gm. beets, 120 gm. prunes.

Along with this, definite quantities of butter and sugar and vitamins A and D were consumed each day. Only distilled water and tea made with distilled water were consumed ad lib.

Next, to adjust for this excessive loss of body calcium compared with intake, calcium in the form of milk was added to the diet for 20 day periods until an equlibrium was reached. Then, by comparing the total amount of extra calcium that had to be added to the diet to overcome the known body deficit, the percentage of calcium utilized by the body from the added milk could be calculated.

Calcium Utilization Varies

The data collected showed that individuals were consistent in their utilization of calcium from test to test, but there appeared to be a wide variation in utilization between individuals —the range being from 18% to 49%. The average of all the subjects was 29%. The fact that this wide individual variation exists, as well as such inefficient utilization of calcium from such a rich source of calcium as milk, is surely challenging. It has yet to be discovered why the human body can utilize only 29% of the milk calcium while the rat shows an 80% to 90% utilization. So far as is known, the calcium of other foods is utilized even less completely than is that of milk.

Concerning the actual body requirements for calcium, our experiments show that the average amount of calcium an adult person should consume daily to just maintain equilibrium is 9.55 mg. per kilogram of body weight or 357 mg. per sq. meter of surface area. In other words, a 170 lb. man, on the diet listed above which made up only about one-third of the calcium necessary for maintenance, should drink at least one pint of milk a day.

It should be mentioned that these figures for calcium requirements are 50% higher than the accepted figures established for maintenance some years ago.

Although it may be possible for the body to adjust itself to lower levels of daily calcium, data are not available to show how extensive and time-consuming this process may be; and, furthermore, we have no information concerning the detrimental effects such low calcium levels may have on the normal body function.

VOLUNTEERS IN A NUTRITION DEFENSE PROGRAM

By Mrs. Alice H. Smith, Nutritionist
Cleveland Health Council

Home Economists have the responsibility of interpreting to the public the scientific truths given to them from nutrition research laboratories. To do this effectively, they must keep up to date with nutrition literature, cooperate with other agencies engaged in similar work, make full use of all available resources including volunteer workers, and do everything possible to reach the greatest number of families and individuals.

A group especially well qualified to do volunteer work with health and welfare agencies is the Homemakers Section of the American and local Home Economics Associations. Such an arrangement has been functioning in Cleveland, Ohio. A refresher course in nutrition was given to eight homemakers with the understanding that these women would do some volunteer work with the Cleveland Health Council in the field of nutrition education.

During the course, a request for assistance came from the co-ordinator of social and health agencies in the Tremont section of Cleveland. A survey of the neighborhood had revealed distressing health needs. Examination of 1556 public school children showed that 1479 children had carious teeth. A nutrition education program as a preventative step was requested.

A representative group of mothers from the P.T.A.'s and other women's clubs of the community met to study the problem. They received enthusiastic support, and two classes were inaugurated, one representing families in which there was an acute need for the program, and the other class built up by quotas allowed to the participating clubs. Classes were held once weekly for eight weeks; two of the volunteer teachers were assigned to each meeting.

The matter of an adequate diet for the whole family was discussed in each class and the discussion was accompanied by a demonstration. This was done in the hope that actually handling and serving a taste of the foods would have much more meaning and value to the women than a straight lecture. The women saw the correct methods of food preparation and learned that food can look and taste good as well as be good nutritionally.

An important consideration in such a program is the ability of the teachers to answer accurately the many ques-

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DID YOU KNOW ?

—that the new battleships and aircraft carriers now being built—or on order —will be equipped with ice cream soda fountains?

—that the recently released figures on the U. S. Census of Business show that ten billion dollars out of a total of 42 billion (about 24%) were spent in the nation's food stores?

—that the teeth of the Dionne quintuplets are without any signs of decay? Apparently proper diet and early dental care have had their effect.

—that soy bean flour is a rich source of thiamine, riboflavin, and nicotinic acid?

—that dairy scientists are giving increased attention to foreign type cheeses? Many of these cheeses, formerly imported in large quantities, may be made in the United States in the future.

—that vitamin B_1, thiamine, is necessary for the complete metabolism of carbohydrates?

—that citric acid, which gives lemons and oranges their sourness, is also present in cranberries, currants, strawberries, raspberries, and many other fruits?

—that iron will appear in a cow's milk within five minutes after the animal is fed iron-containing food? This was discovered by experiments with radioactive iron.

THINGS YOU'LL LIKE TO READ

A PRIMER FOR DIABETIC PATIENTS — Russell M. Wilder. W. B. Saunders Co., 1941. 7th edition. $1.75.

A brief outline of the treatment of diabetes with diet and insulin, including directions and charts for the use of physicians in planning diet prescriptions.

PLANNING DIETS BY THE NEW YARDSTICK OF GOOD NUTRITION — Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C., July, 1941. Free.

This bulletin presents the new recommended dietary allowances in terms of common foods. Plans for a low-cost adequate diet, a moderate-cost adequate diet, and a liberal diet are given.

FOODS AND NUTRITION — Fern Silver. D. Appleton-Century Co., 1941. $1.72.

Principles of nutrition and meal planning are presented for high school courses in foods and nutrition. Each chapter includes activities and problems and is followed by a bibliography.

CHEMISTRY OF FOOD AND NUTRITION — Henry C. Sherman. Macmillan Company, 1941. Sixth edition. $3.25.

Dr. Sherman's book has been revised to incorporate recent advances in nutrition. Three new chapters relating to the vitamins have been added.

NEW DIETARY ALLOWANCES

The daily dietary allowances for a moderately active man are as follows:

Calories 3000	Vitamin A 5000 I.U.
Protein 70 gm.	Thiamine (B_1) 1.8 mg.
Calcium 0.8 gm.	Ascorbic Acid (C) 75 mg.
Iron 12 mg.	Riboflavin (G) 2.7 mg.
	Nicotinic Acid 18 mg.

These allowances can be met by eating the following foods in one day's meals.

Milk	1 pint
Meat	¼ lb. (raw weight)
Potatoes	3 medium
Navy beans	scant ¼ c. uncooked
Cabbage (raw)	1 cup
Carrots (cooked)	½ cup
Tomato, fresh	2 medium
or canned	1 cup
Prunes	8 medium
Butter	5 tbsp.
Oatmeal	⅔ c. uncooked
Bread (enriched)	4-5 slices
Flour (white)	½ cup
Sugar, jam	4 tbsp.
Fat	3 tbsp.

VOLUNTEERS IN A NUTRITION DEFENSE PROGRAM

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tions which are asked during and at the conclusion of the class. Only a home economics graduate who is up to date in her foods and nutrition information is qualified to answer the questions.

It is always difficult to measure the success of an educational program such as this, but some evidence of the degree of success is indicated by the following: There were increased gains in weight of children, more satisfaction displayed by husbands in the meals they were served, and complete satisfaction in finding that food dollars did go further. Fourteen groups have been taught, with a total of about 250 mothers. A measure of interest from the professional point of view is the fact that the refresher course has been opened to graduate dietitians as well as graduate home economists. Twenty-eight volunteers have taken the course. A unanimous vote was cast to repeat the course if possible.

This project demonstrated the fact that mothers do want assistance in the matter of selecting and preparing food to feed their families so that they may secure and maintain good health. It is the type of program which can be fitted into the national nutrition program for defense.